

### 6-3: The Graph-Translation Theorem

In-Class Activity p. 356: Record your findings below. Use a graphing calculator.

1.b.

2.b.

3.a.

4.b.

5.b.

6.a.

7.

8.

Compare:

$$y = x^2$$

$$y = (x - 2)^2 + 4$$

$$y = (x + 6)^2 + 3$$

Vertex of each:

*Graph-Translation Theorem:*

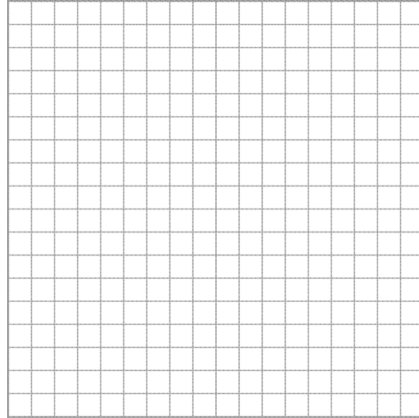
*Example 1:*

a. Find the image of  $y = 5x^2$  under  $T_{-\frac{2}{3}, 6}$ .

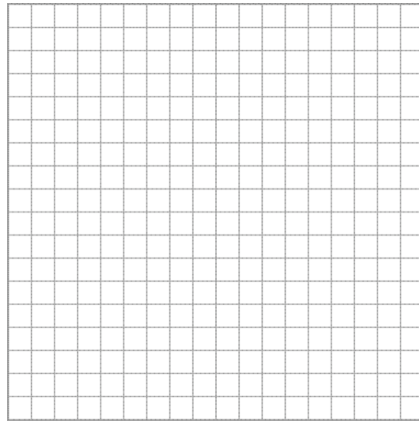
b. Graph both equations in your graphing calculator. What do you notice?

*Vertex Form of a Parabola:*

Example 2: Graph  $y - 2 = -2(x + 3)^2$  by hand.



Example 3: Graph  $y + 3 = \frac{1}{2}x^2$  by hand.



What do you notice about what is happening on either side of the vertex?

*Axis of Symmetry:*

*Maximum/Minimum:*

When graphing a parabola by hand:

*Homework:*

***"If the wind will not serve, take to the oars." - Latin Proverb***